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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,387	06/05/2002	John Gordon Rushbrooke	602-1551	4707
23644	7590	04/01/2005		EXAMINER
BARNES & THORNBURG P.O. BOX 2786 CHICAGO, IL 60690-2786			LAUCHMAN, LAYLA G	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 04/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/018,387	RUSHBROOKE ET AL. <i>[Signature]</i>	
	<b>Examiner</b>	<b>Art Unit</b>	
	L. G. Lauchman	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 65-109 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 65-109 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 13 December 2001 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All. b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION*****Specification***

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

**Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or  
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a).  
"Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the shutter of Claim 65 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Objections***

Claim 81 is objected to because of the following informalities: There is a typo in "according to claim 68". Appropriate correction is required.

Claims 93-95, 97-99, 101-109 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

The fact that the independent and dependent claims are in different statutory classes does not, in itself, render the latter improper. On the other hands, if claim 1 recites a method of making a specified product, a claim to the product set forth in claim 1 would not be a proper dependent claim, since it is conceivable that the product claim can be infringed without infringing the base method claim if the product can be made by a method other than that recited in the base method claim. MPEP 608/01(n). In case of Claim 93, the apparatus as claimed can perform a method other than that recited in the base method claim, since the shutter means, the computing and analyzing means are not included in the method steps of the base method claim. In case of Claim 97, the apparatus as claimed can perform a method other than that recited in the base method claim, since the shutter means, the computing and analyzing means are not included in the method steps of the base method claim. In case of Claim 101, the apparatus as claimed can perform a method other than that recited in the base method claim, since the shutter means, the computing and analyzing means are not included in the method steps of the base method claim.

#### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 66 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 66 recites the limitations "the optical system excitation wavelength illumination" and "the optical imaging devices". There is insufficient antecedent basis for this limitation in the claim.

In view of the objections above, claims 93-95, 97-99, 101-109 have antecedent problems. For example, it is not clear whether a filter in claim 93, line 1, is a second filter or the same filter, which has already been claimed in claim 68.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 65-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Volcker et al (US 6,686,582), in view of Tiziani et al (Applied Optics, vol. 33, No. 4), and further in view of Dandliker et al (US Re.34,782)

As to Claims 65-67, Volcker teaches (see Figs. 2 and 1) a method, comprising focusing light emitted from each sample 11 (see Fig. 1) at infinity so as to form a parallel beam, further using a lens 42 to re-establish a parallel array of light beams so as to present to an addressable detector array a plurality of parallel light paths, and individually addressing different regions of

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the detector array onto which the parallel light paths impinge, and storing data relating to the quantity of incident light on each region of the detector array. Objective lenses are arranged above the sample array.

Volcker does not teach the pinhole aperture positioned at the focal point of the focusing lens. Tiziani et al use a small aperture for detection of light emanating from the focal point of the objective lenses of a microlens array in a similar method and apparatus. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the pinhole aperture in the invention of Volcker as taught by Tiziani, since the pinhole would provide attenuating unwanted fluorescence and improve the resolution of the optical system.

The combination of inventions of Volcker and Tiziani does not teach a shutter for inhibiting the transfer of light to the detector as it is claimed. However, Dandliker describes an apparatus for measuring fluorescence having a shutter 26 (see col. 8, line 67 through col. 9, line 23; col. 9 lines 51-66; col. 10, lines 56-59) for controlling fluorescence detected by the detector 34). It would have been obvious to one skilled in the art at the time the invention was made to provide a shutter Dandliker in the combination of inventions of Volker and Tiziani, in order to provide detecting within a particular time period so as to optimize the detection of the particular fluorescence.

Claims 68-92, 96, 100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Volcker et al (US 6,686,582), and further in view of Tiziani et al (Applied Optics, vol. 33, No. 4)

As to Claims 68-92, 96, 100, Volcker teaches (see Fig. 2) a method of imaging a plurality of micro-sample light emitting sites simultaneously onto separately addressable detectors (see col. 2, lines 33-43), so that light emitted from each site is monitorable by one of the detectors,

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wherein a corresponding plurality of objective lenses 21 each comprising a micro-lens are located adjacent to the micro-sample array 1 with one objective lens for each micro-sample, the latter are located at or near the focal point of each of the microlenses so that the light emanating from each micro-sample is collected by its respective objective lens and converted into a beam of parallel or near parallel rays, the objective lenses are arranged so that the axes of all the beams issuing therefrom are parallel and spaced apart. Volcker also teaches a filter and an aperture mask, see col. 5, lines 3 –13), and an array of 96 micro-lenses positioned to image on a spot of small size at the surface of the detector.

Claims 93-95, 97-99, 1001-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Volcker et al (US 6,686,582), in view of Tiziani et al (Applied Optics, vol. 33, No. 4), as applied to claim 68, 96, and 100, and further in view of Dandliker et al (US Re.34,782).

Volcker teaches (see Figs. 2 and 1) a method, comprising focusing light emitted from each sample 11 (see Fig. 1) at infinity so as to form a parallel beam, further using a lens 42 to re-establish a parallel array of light beams so as to present to an addressable detector array a plurality of parallel light paths, and individually addressing different regions of the detector array onto which the parallel light paths impinge, and storing data relating to the quantity of incident light on each region of the detector array. Objective lenses are arranged above the sample array.

Volcker does not teach the pinhole aperture positioned at the focal point of the focusing lens. Tiziani et al use a small aperture for detection of light emanating from the focal point of the objective lenses of a microlens array in a similar method and apparatus. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the pinhole

aperture in the invention of Volcker as taught by Tiziani, since the pinhole would provide attenuating unwanted fluorescence and improve the resolution of the optical system.

The combination of inventions of Volcker and Tiziani does not teach a shutter for inhibiting the transfer of light to the detector as it is claimed. However, Dandliker describes an apparatus for measuring fluorescence having a shutter 26 (see col. 8, line 67 through col. 9, line 23; col. 9 lines 51-66; col. 10, lines 56-59) for controlling fluorescence detected by the detector 34). It would have been obvious to one skilled in the art at the time the invention was made to provide a shutter Dandliker in the combination of inventions of Volker and Tiziani, in order to provide detecting within a particular time period so as to optimize the detection of the particular fluorescence.

Volcker does not teach a pinhole aperture located in front of the detector lens, circuit means and computing and analyzing circuit means along with the memory means. Tiziani et al use a small aperture for detection of light emanating from the focal point of the objective lenses of a microlens array in a similar method and apparatus. The article also teaches computing, analyzing and memory means (see p. 569, paragraph 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the pinhole aperture in the invention of Volcker as taught by Tiziani, since the pinhole would provide an image of the micro-sample light emissions in the plane of an array of photoelectric detectors. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the invention of Volcker with the computing , analyzing and memory means in order to improve the efficiency of the fluorescence measurement.

***Response to Arguments***

Applicant's arguments with respect to the new claims have been considered but are moot in view of the new ground(s) of rejection.

Applicant should submit an argument pointing out disagreements with the examiner's contentions. Applicant must also discuss the references applied against the claims, explaining how the claims avoid the references or distinguish from them.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

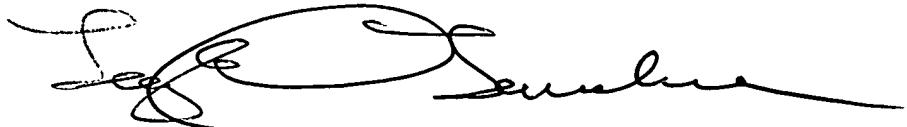
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to L. G. Lauchman whose telephone number is (571) 272-2418. The examiner's normal work schedule is 8:00am to 4:30pm (EST), Monday through Friday. If attempts to reach examiner by the telephone are unsuccessful, the examiner's supervisor Gregory J. Toatley, Jr. can be reached on (571) 272-2059, ext. 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application should be directed to the TC receptionist whose telephone number is (571) 272-1562.



L. G. Lauchman  
Primary Examiner  
Art Unit 2877

March 29, 2005